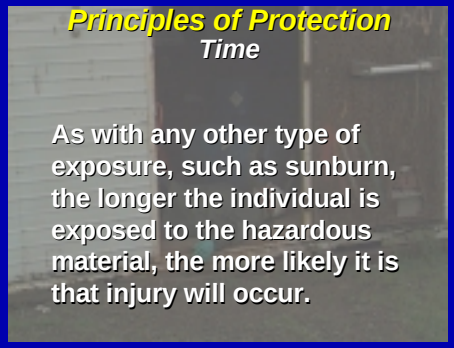
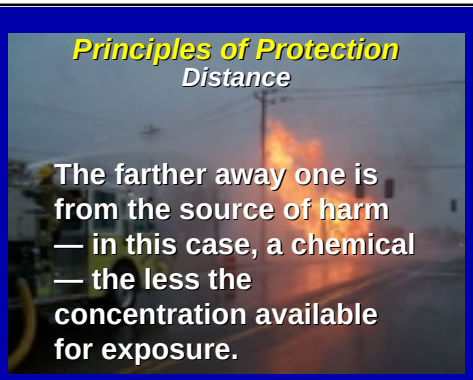
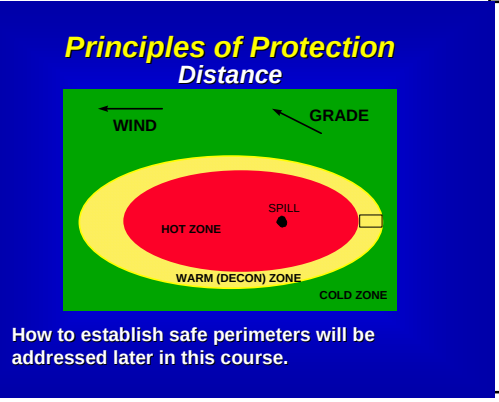
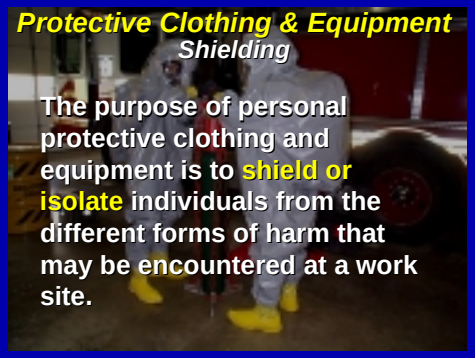
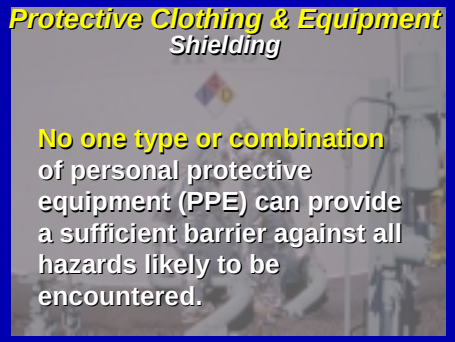
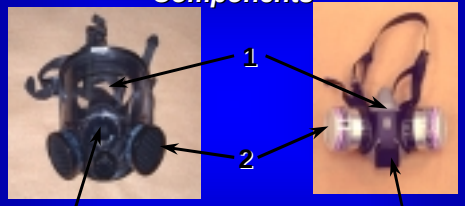
Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing & Equipment 		
Principles of Protection I. Time II. Distance III. Shielding		
		

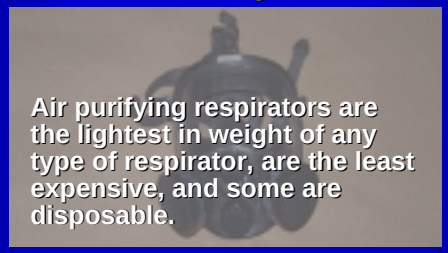
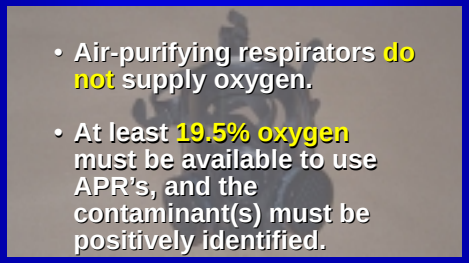
Slides	Primary Course Information	Instructor Activity/Information
		
		
		

Slides	Primary Course Information	Instructor Activity/Information
 It is an absolute requirement for the I.C. to be familiar with the necessary resources to obtain information on the compatibility of various protective materials when they are placed in contact with the hazardous material.		
		
		

Slides	Primary Course Information	Instructor Activity/Information
Principles of Protection ***Shielding*** Shielding is generally thought of as a wall or possibly a lead shield. In the context of hazardous materials it also refers to the protective clothing worn by the worker.		
Principles of Protection ***Shielding***  It should never be assumed that protective clothing materials will provide protection regardless of the hazardous material involved.		
Respiratory Protection The respiratory system is the primary route for chemical exposures in the work place.		

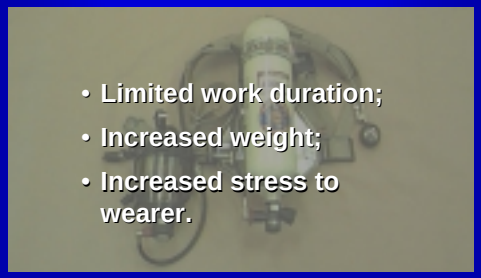
Slides	Primary Course Information	Instructor Activity/Information
Respiratory Protection ***Legal Requirements*** OSHA legislation, contained in the Respiratory Protection Standard, 29CFR1910.134, introduced certain requirements for respirator use, testing, and certification.		
Respiratory Protection ***29CFR1910.134***  The employer shall not permit respirators to be worn by employees who have any condition that interferes with the face-to-facepiece seal or valve function.		
Respiratory Protection ***Types of Protection*** • Air-purifying respirators (APR) • Supplied-air respirators (SAR) • Self-contained breathing apparatus (SCBA)		

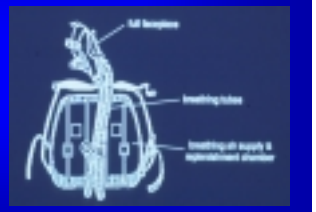
Slides	Primary Course Information	Instructor Activity/Information
Air-Purifying Respirators (APR's)  Full-mask Half-mask		
Air-Purifying Respirators (APR's) *Application*  Air-purifying respirators are not recommended for use by first responders in the emergency phase of a hazardous material incident.		
Air-Purifying Respirators (APR's) *Components*  1 2 3 3 1. face piece 2. filter/sorbent cartridge 3. exhalation valve		

Slides	Primary Course Information	Instructor Activity/Information
Air-Purifying Respirators (APR's) ***Advantages***  		
Air-Purifying Respirators (APR's) ***Limitations***  		
Supplied-Air Respirators (SAR's) 		

Slides	Primary Course Information	Instructor Activity/Information
Supplied-Air Respirators (SAR's) ***Components***  face piece exhalation valve breathing tube remote air supply regulator escape bottle air supply tube		
Supplied-Air Respirators (SAR's) ***Advantages*** • SAR's Protect the wearer from particles or gases, and supply oxygen; • SAR's Allow for extended use; • SAR's Cool the wearer; • SAR's are Lighter than SCBA's.		
Supplied-Air Respirators (SAR's) ***Limitations*** • The Hose length is limited; • The Airline may become twisted and tangled; • The Wearer is required to enter and exit the work area along the same path. • Hose may not be compatible with hazardous substances; • Escape bottles are required; • SAR's Require continual monitoring and maintenance.		

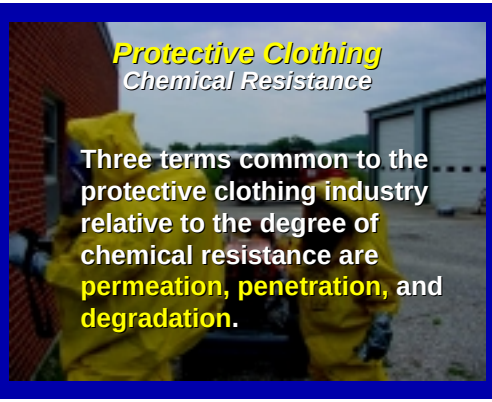
Slides	Primary Course Information	Instructor Activity/Information
Self-Contained Breathing Apparatus (SCBA) 		
Self-Contained Breathing Apparatus ***Components***  1. air cylinder & valve 2. air supply tube 3. regulator 4. face piece 5. exhalation valve		
Self-Contained Breathing Apparatus ***Advantages*** • Highest level of respiratory protection available; • Portable air supply; • Increased mobility; • Reduced potential for injuries.		

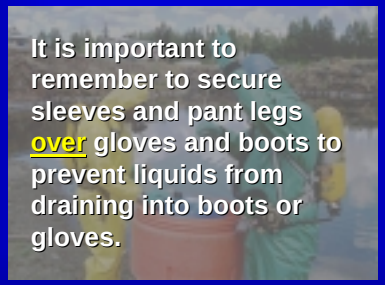
Slides	Primary Course Information	Instructor Activity/Information
Self-Contained Breathing Apparatus ***Limitations***  • Limited work duration; • Increased weight; • Increased stress to wearer.		
Self-Contained Breathing Apparatus ***Types*** Self-contained breathing apparatus for entry into and escape from a hazardous material incident are available in two basic design types: • open circuit • closed circuit		
Self-Contained Breathing Apparatus ***Open Circuit SCBA*** Open circuit SCBA is so named because the exhaled air is discharged directly to the outside atmosphere. This is the type of SCBA most widely in service today. 		

Slides	Primary Course Information	Instructor Activity/Information
Self-Contained Breathing Apparatus ***Closed Circuit SCBA*** In the "closed circuit" or "rebreather" SCBA the exhaled air is recycled. Here the carbon dioxide is removed and the oxygen is then replenished. 		
Self-Contained Breathing Apparatus ***Closed Circuit vs. Open Circuit*** Advantages: • last longer • generally are lighter in weight		
Self-Contained Breathing Apparatus ***Closed Circuit vs. Open Circuit*** Limitations: • include hazardous material • generate heat		

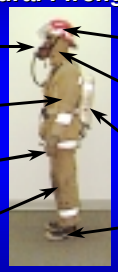
Slides	Primary Course Information	Instructor Activity/Information
Respirator Selection ***Guidelines for HazMat First Responders:*** ★ SCBA recommended. SAR's have limited application... X APR's not recommended during emergency operations!		
Physical Requirements • The use of respirators places a strain on the wearer's cardiovascular system. • Claustrophobic people may not be able to wear respirators.		
Physical Requirements **OSHA 29CFR 1910.134 requires a medical exam prior to wearing a respirator for work.**		

Slides	Primary Course Information	Instructor Activity/Information
Physical Requirements  **Fit-testing shall be performed on the employee in accordance with 29CFR1910.134(f) prior to wearing a respirator for work.**		
Respirator Care  **Essential to the use of respiratory protective equipment is care and cleaning.** **Follow the manufacturers' guidelines for the care of your equipment.**		
Protective Clothing ***Classes*** **We will examine three general classes of protective clothing:** • **structural firefighting** • **high-temperature** • **chemical**		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing *Classification of Firefighter Clothing*  HazMat incidents almost always involve firefighters, yet structural firefighter protective clothing is not designed to protect the wearer against chemicals.		
Protective Clothing *Chemical Resistance*  Three terms common to the protective clothing industry relative to the degree of chemical resistance are permeation, penetration, and degradation.		
Protective Clothing *Chemical Resistance: Permeation*  Permeation is the term used to describe a chemical's ability to actually work its way through the fabric on a molecular level.		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing *Chemical Resistance: Permeation*  Different fabrics have different resistance to chemical permeation and all will absorb chemicals, although at widely varying rates.		
Protective Clothing *Chemical Resistance: Penetration*  Penetration is the term used to describe a chemicals ability to leak through openings in the garment, such as a zipper.		
Protective Clothing *Chemical Resistance: Penetration*  It is important to remember to secure sleeves and pant legs over gloves and boots to prevent liquids from draining into boots or gloves.		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing *Chemical Resistance: Penetration*  This should be done using adjustable velcro straps instead of duct tape.		
Protective Clothing *Chemical Resistance: Degradation*  Some chemicals may actually dissolve, cause to turn brittle, swell, or crack a fabric. This is referred to as degradation.		
Protective Clothing *Chemical Resistance: Degradation* Degradation: • can be caused from ultraviolet light • is a visible process • increases the rates of permeation and penetration.		

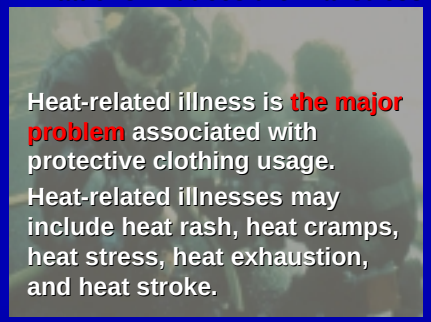
Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing ***Chemical Resistance: Degradation***  **Abrasion can cause breaching of a protective suit under routine conditions - stay off your knees!**		
Protective Clothing ***Structural Firefighting***  **Structural firefighter protective clothing is designed to protect the wearer from the ordinary hazards of structural fires when worn properly.** ***Not designed for use in chemical emergencies***		
Protective Clothing ***Structural Firefighting***  facepiece coat gloves pants helmet hood SCBA boots ***Not designed for use in chemical emergencies***		

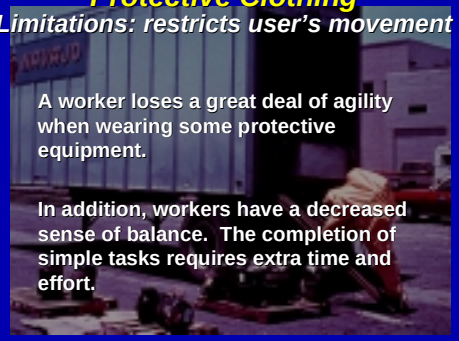
Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing *Structural Firefighting* **Limitations:** • It can absorb chemicals readily. • It offers no protection against chemical permeation or degradation. • Subject to failure when exposed to chemicals.  *Not designed for use in chemical emergencies*		
Protective Clothing *Structural Firefighting* **Limitations:** • Can cause chronic exposure if not properly decontaminated. • May not be able to be fully decontaminated.  *Not designed for use in chemical emergencies*		
Protective Clothing *High-temperature*  Specialized high-temperature clothing is designed to provide protection against brief radiant heat exposures in temperatures as high as 2,000° Fahrenheit. *Not designed for use in chemical emergencies*		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing *High-temperature: Types* "Proximity suits" consist of a one or two-piece overgarment with hood, gloves, and occasionally boot covers of an aluminized nylon or cotton fabric. Specialized high-temperature "fire entry suits" are designed to protect the wearer against abnormally high temperatures for a maximum of two to three minutes. *Not designed for use in chemical emergencies*		
Protective Clothing *High-temperature* Limitations: • provides no chemical protection • SCBA and auxiliary cooling required *Not designed for use in chemical emergencies*		
Protective Clothing *Chemical Protective: Design*  Encapsulating Suit		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing *Chemical Protective: Design*  Non-encapsulating Suit		
Protective Clothing *Chemical Protective*  Chemical protective clothing is designed to protect the wearer from chemical contact with the skin or eyes. *Not designed for use in flammable atmospheres*		
Protective Clothing *Chemical Protective* Its construction is characterized by: • chemical-specific compatibility • lack of thermal protection • ability to be either reusable or disposable • encapsulating or non-encapsulating *Not designed for use in flammable atmospheres*		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing *Chemical Protective* Construction materials: • Neoprene • Tyvek™ • PVC • Saranex™ • CPE • Chemrel™ • butyl • nitrile *Not designed for use in flammable atmospheres*		
Protective Clothing *Chemical Protective* Fabric limitations: • PVA is soluble in water • neoprene reacts with acids • viton reacts with some hydrocarbons • duct tape reacts with oxidizers *Not designed for use in flammable atmospheres*		
Protective Clothing *Fully-encapsulating Suits*  One-piece garments which provide chemical protection for the entire body. Boots and gloves may be an integral part of the suit, attached yet replaceable, or separate. Suit requires the use of an SCBA or SAR. All components are integrated to provide sealed "micro-environment."		

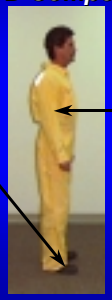
Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing ***Non-encapsulating Suits***  Commonly consist of a two-piece or a one-piece coverall. They are frequently used when gas-tight body protection is not required. Provide excellent protection against splashes, dust, and other materials which cannot migrate between the overlaps of the various layers. Note: velcro bands		
Protective Clothing ***Limitations of PPE*** PPE is a necessity for all hazardous materials work. While PPE affords the worker protection from the chemical hazards in the work site, it may also increase the risk of other hazards.		
Protective Clothing ***Limitations: induces thermal stress***  Heat-related illness is the major problem associated with protective clothing usage. Heat-related illnesses may include heat rash, heat cramps, heat stress, heat exhaustion, and heat stroke.		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing ***Limitations: induces thermal stress***   Cooling the entry and back-up teams prior to entry can help to prevent heat-related illness. REMEMBER to hydrate prior to suiting up!		
Protective Clothing ***Limitations: induces thermal stress***  Cold-related illness is a problem that can be associated with protective clothing usage in excessively cold environments and using unheated water during decontamination.		
Protective Clothing ***Limitations: restricts user's movement***  A worker loses a great deal of agility when wearing some protective equipment. In addition, workers have a decreased sense of balance. The completion of simple tasks requires extra time and effort.		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing ***Limitations: restricts user's movement***  **Because workers are often required to wear more than one pair of gloves, tasks requiring good hand agility are very difficult, if not impossible.**		
Protective Clothing ***Limitations: restricts user's vision***  **Workers wearing protective suits and SCBA have a decreased field of vision.**		
Protective Clothing ***Limitations: restricts user's hearing***  **Hoods, breathing apparatus, and hearing protectors decrease the worker's ability to hear.**		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing ***Limitations: restricts communications***  Communication may be very difficult when wearing protective equipment such as encapsulating suits and SCBA's.		
Protective Clothing ***Limitations: increases claustrophobia***  Some workers suffer from claustrophobia when subjected to wearing PPE such as fully encapsulating suits or respirators.		
Protective Clothing ***Limitations: no thermal protection***  Most chemical protective suits are not designed to protect the wearer against flames or radiant heat.		

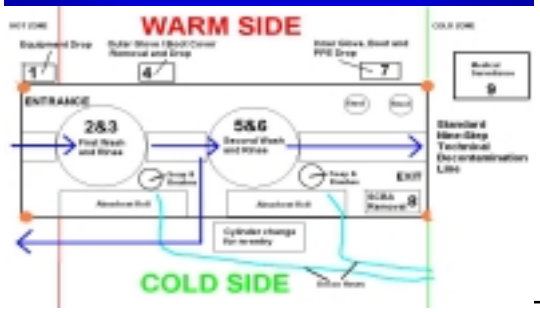
Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing ***Limitations: maintenance problems***  **If a good inspection and maintenance program is not a part of the overall PPE program there may be unnecessary worker exposures.**		
Protective Clothing ***EPA Levels of Protection*** **Level A** **Level B** **Level C** **Level D**		
Protective Clothing ***Level D***  **Level D is used when special respiratory or skin protection is not necessary.**		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing ***Level D Components***  Coveralls **OR** work uniform Chemical-resistant boots with steel toe & shank		
Protective Clothing ***Level D*** It is comprised of a work uniform affording only minimal protection, and is used to guard against nuisance contamination only. You may use level D protection only when work functions rule out the possibility of splashes, immersion, or the potential for unexpected inhalation of, or contact with, hazardous levels of any chemicals.		
Protective Clothing ***Level C***  **Level C** is used when maximum skin or respiratory protection is not required. **Level C** is the only level where APR's may be used. Make certain that sufficient respiratory protection will be given by APR's.		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing *Level C Components*  Chemical-resistant inner & outer gloves Hooded chemical-resistant clothing Chemical-resistant outer boots with steel toe & shank		
Protective Clothing *Level C* Use of Level C presumes that the types of air contaminants have been identified, concentrations measured, the atmosphere contains at least 19.5% oxygen, and an approved compatible APR is available that can remove the contaminants.		
Protective Clothing *Level B*  Level B is used when the highest level of respiratory protection is necessary, but a lesser level of skin protection is needed.		

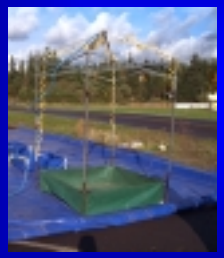
Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing ***Level B Components***  NIOSH Approved full-face SCBA **OR** SAR with escape bottle Chemical-resistant inner & outer gloves Two-way radio Hooded chemical-resistant clothing Chemical-resistant outer boots with steel toe & shank		
Protective Clothing ***Level B*** **Level B protection is the minimum level recommended for initial site entry when contaminants and concentrations are totally unknown.**		
Protective Clothing ***Level A***  **Level A protection must be used when the greatest level of skin, respiratory, and eye protection is needed, such as repairing a toxic gas leak .**		

Slides	Primary Course Information	Instructor Activity/Information
Protective Clothing ***Level A Components*** NIOSH Approved full-face SCBA OR SAR with escape bottle Chemical-resistant inner & outer gloves  Two-way radio Fully-encapsulating suit Chemical-resistant outer boots with steel toe & shank		
Protective Clothing ***Permissible Use*** • Choose the proper PPE for each situation. • Training is mandatory using the PPE before working in it. • Follow the manufacturer's recommendations.		
 Chapter Eleven Decontamination		

Slides	Primary Course Information	Instructor Activity/Information
Decontamination Decontamination, or **decon** is an essential process to a successful hazardous materials response. The **key** to a proper decon setup is the **compatibility** of the items you use in your decon line with the chemical you are dealing with.		
Decontamination   • *Planning is the key to a successful decon process.* • Develop SOGs that layout a decon setup. • Practice setting up your decon line. • Work as you have practiced.		
Decontamination **This is a sample decon layout.**  		

Slides	Primary Course Information	Instructor Activity/Information
Assign a Decon Officer  • Over sees Decon Processes • Local person • Identifies equipment • Supplies the corridor		
Establish the corridor  • Emergency Decon first • Level terrain • Upwind, uphill		
Pre-decontamination Phase ***Supply the Decon Corridor***  • **protect the ground** • **supply the necessary equipment** • **provide for water containment**		

Slides	Primary Course Information	Instructor Activity/Information
Pre-decontamination Phase ***Supply the Decon Corridor*** **Protect the ground**  **Prior to equipping the decontamination area, protect the ground surface where you will be working:** **Lay down plastic sheeting or salvage covers.** **To anchor the plastic sheeting, you may use dirt or wood.** **Note: Compatibility of materials is essential.** **Wood may absorb some substances while dirt may react with others.**		
Pre-decontamination Phase ***Supply the Decon Corridor*** **You can also lay the ground cover over a frame of wood timbers and brackets.** **Remember: The ground cover is laid down to stop water used for decon from saturating the soil or pavement.** **If plastic is to be used, ensure a minimum thickness of at least 6 mil (0.006”) to prevent the material from tearing or perforating too easily.**		
Pre-decontamination Phase ***Supply the Decon Corridor***   **Water can also be taken from a hydrant and distributed through a manifold system to garden hoses.**		

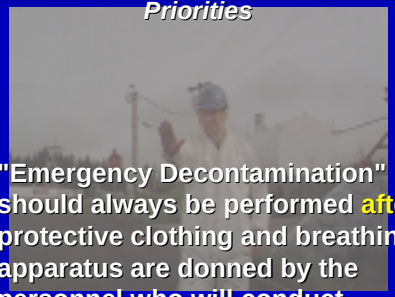
Slides	Primary Course Information	Instructor Activity/Information
Pre-decontamination Phase ***Supply the Decon Corridor***  A step ladder can be set up to aid decon personnel with overhead rinsing. A fire department booster line can be used as a water source. If so, water pressure should be kept low to prevent injury to personnel. Note: Plastic, metal, and water make for slippery conditions. Take the necessary safety precautions to prevent falls.		
Pre-decontamination Phase ***Supply the Decon Corridor***  An alternative to a ladder is a low-pressure nozzle, such as those used to water hanging plants. It will achieve the same purpose without subjecting the decon personnel to a fall hazard.		
Pre-decontamination Phase ***Supply the Decon Corridor***  A portable shower, made of a PVC or aluminum frame with a canvas or hypalon basin to catch the runoff satisfies many of these requirements.		

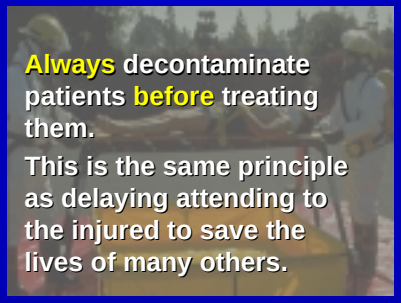
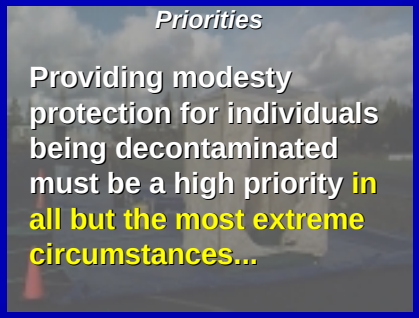
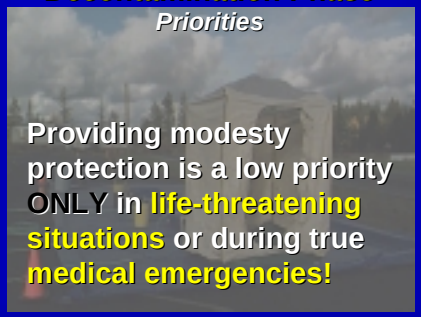
Slides	Primary Course Information	Instructor Activity/Information
Pre-decontamination Phase ***Supply the Decon Corridor***  **This configuration also allows the use of a curtain for privacy protection.**		
Pre-decontamination Phase ***Supply the Decon Corridor***  Additional equipment should be set out for possible use during decon: • Spare SCBA and bottles • Disposable paper blankets and footware for decontaminated personnel to wear outside the decon area, if necessary. • Shovels		
Pre-decontamination Phase ***Supply the Decon Corridor***   **A backboard and folding ladder can be used for deconning injured or unconscious victims.**		

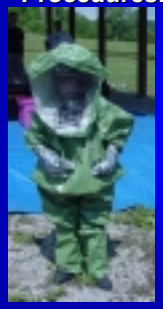
Slides	Primary Course Information	Instructor Activity/Information
Pre-decontamination Phase ***Supply the Decon Corridor***  • Chairs • Trash barrels to contain contaminated disposable and salvageable items to be further decontaminated later.		
Pre-decontamination Phase ***Supply the Decon Corridor*** **Provide for water containment** Water used to decon personnel and equipment must be contained within the perimeter of the decontamination corridor. The methods for containing the runoff water will depend upon resources available at the scene - or accessible within a short time.		
Pre-decontamination Phase ***Supply the Decon Corridor*** Children's inflatable wading pools require prior purchase during planning stages, but they are easy to store and very effective at containing runoff water. A defect or damage that has occurred during storage or transport may render them inoperable, however.		

Slides	Primary Course Information	Instructor Activity/Information
Pre-decontamination Phase ***Supply the Decon Corridor***  **Pre-formed or rigid wading pools are more dependable, but present a storage problem.**		
Pre-decontamination Phase ***Supply the Decon Corridor*** Cardboard boxes can be stored flat, set up and lined with a double thickness of plastic trash bags or plastic sheeting. A "catchall" is a salvage cover folded so it will retain liquids.		
Pre-decontamination Phase ***Supply the Decon Corridor***  **Absorbent materials can be used to dike areas to prevent decontamination water runoff, or decontamination water can be diverted using absorbent material.** 		

Slides	Primary Course Information	Instructor Activity/Information
Pre-decontamination Phase ***Supply the Decon Corridor*** **A portable sump, erected out of a ladder, pike poles and salvage covers or plastic sheeting, will contain 200 to 300 gallons of decontamination water runoff.** 		
Pre-decontamination Phase ***Supply the Decon Corridor***  **Another portable sump design can be pre-constructed from PVC pipe and hypalon canvas. It can be stored flat and then assembled in a few moments by the decon personnel.**		
Pre-decontamination Phase ***Summary*** **Establish Decon SOP's** **Procedures for establishing and supplying a decon area as well as conducting decon should be written into standard operating procedures ("SOPs") and familiar to all emergency responders within each organization.**		

Slides	Primary Course Information	Instructor Activity/Information
Decontamination Phase ***Priorities*** **Priorities for establishing and conducting decontamination:** **a. People** **b. Environment** **c. Property/Equipment**		
Decontamination Phase ***Priorities*** • protect decon team first • decontaminate patients before treating them • emergency decontamination takes priority over modesty and weather exposure		
Decontamination Phase ***Priorities***  **"Emergency Decontamination" should always be performed after protective clothing and breathing apparatus are donned by the personnel who will conduct decontamination.**		

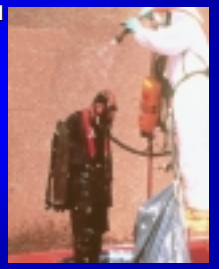
Slides	Primary Course Information	Instructor Activity/Information
Decontamination Phase ***Priorities*** 		
Decontamination Phase ***Priorities*** 		
Decontamination Phase ***Priorities*** 		

Slides	Primary Course Information	Instructor Activity/Information
Decontamination Phase ***Procedures: Level 1 Field Decon***  **Level 1 Decon is the minimum level of decontamination and must be conducted on any individual who is likely to have become contaminated, whether emergency responder or citizen.**		
Decontamination Phase ***Procedures: Level 1 Field Decon*** **The most simple type of field decon is Level 1.** **The contaminated person should be positioned where runoff water will be contained.** **Flush the person off with a fog spray for one full minute.** 		
Decontamination Phase ***Procedures: Level 1 Field Decon*** **Fog sprays should be directed downward at all times to prevent contaminants from being washed up and under clothing.** 		

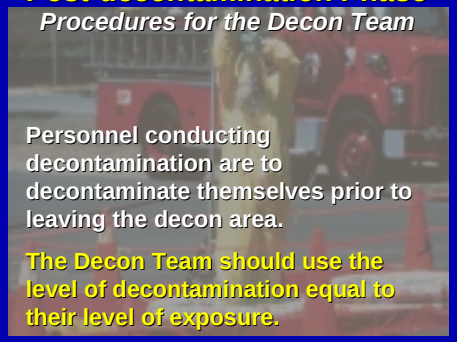
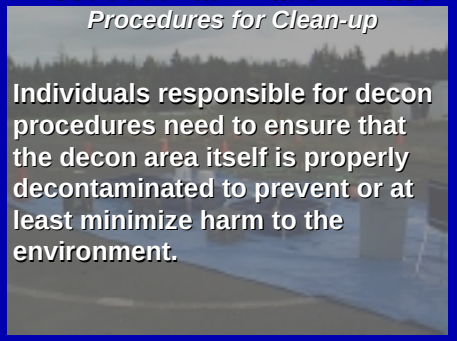
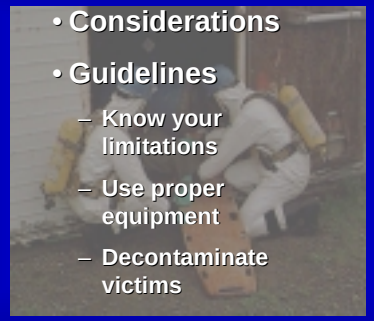
Slides	Primary Course Information	Instructor Activity/Information
Decontamination Phase ***Procedures: Level 1 Field Decon***  Move the person away from the initial flush area and remove protective clothing and breathing apparatus. When removing protective clothing and breathing apparatus following the flush, remove the respirator face piece last.		
Decontamination Phase ***Procedures: Level 2 Field Decon*** Level 2 decontamination provides the same flushing off of the individual, followed by a systematic removal of protective clothing and breathing apparatus. It is intended for those who may have a breach of the suit, but no skin irritation etc.		
Decontamination Phase ***Procedures: Level 2 Field Decon*** The contaminated person should be positioned where runoff water will be contained. Flush the person off with a fog spray for one full minute. 		

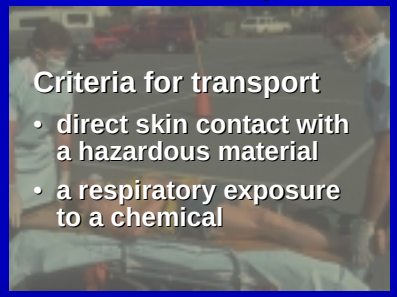
Slides	Primary Course Information	Instructor Activity/Information
Decontamination Phase ***Procedures: Level 2 Field Decon***  Move the person away from the initial flush area and remove protective clothing and breathing apparatus. When removing protective clothing and breathing apparatus following the flush, remove the respirator face piece last.		
Decontamination Phase ***Procedures: Level 2 Field Decon*** Move the person away from the contaminated clothing and remove all remaining clothing.  Remember: plan for, and provide, modesty protection!		
Decontamination Phase ***Procedures: Level 2 Field Decon***  Move the person out of the decon area and wrap in a disposable paper blanket or in disposable coveralls.		

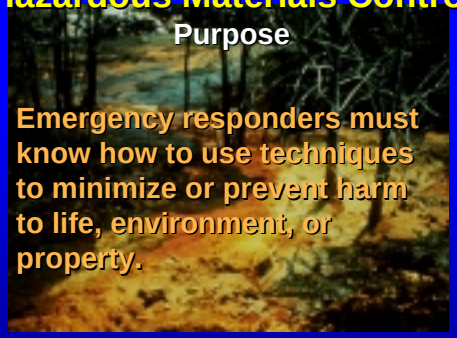
Slides	Primary Course Information	Instructor Activity/Information
Decontamination Phase ***Procedures: Level 2 Field Decon***  Have the person transported to an area for showering with soap and water.		
Decontamination Phase ***Procedures: Level 3 Field Decon*** Level 3 decontamination is the highest and most extensive type of field decon. It is imperative that anyone who has experienced skin contact or even skin irritation undergo Level 3 decon so as to minimize the degree of harm.		
Decontamination Phase ***Procedures: Level 3 Field Decon*** 1) In all levels the first step is to position the person where water can be contained. 		

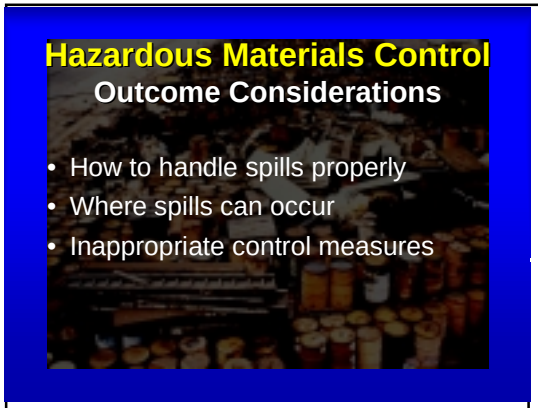
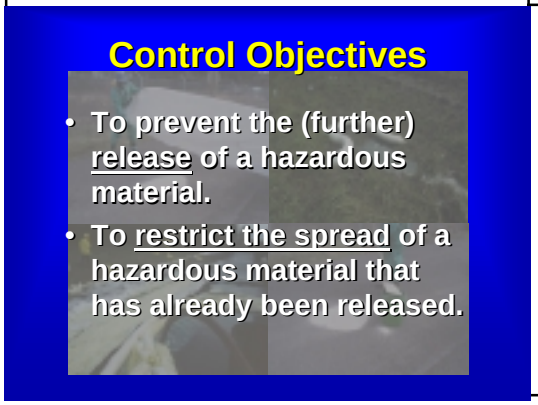
Slides	Primary Course Information	Instructor Activity/Information
Decontamination Phase ***Procedures: Level 3 Field Decon*** 2) Leaving the respirator face piece on (connected to the air supply), flush with fog spray while removing protective clothing and breathing apparatus. Continue to flush and remove all clothing, but leave the respirator face piece on, connected to the air supply. 		
Decontamination Phase ***Procedures: Level 3 Field Decon*** 3) Continue to flush for one minute after all clothing has been removed. 4) Now turn off the air supply and remove the face piece. 5) Move the person away from contaminated runoff. 		
Decontamination Phase ***Procedures: Level 3 Field Decon*** 6) Continue to flush, for a minimum of 15 minutes, all skin areas that have been contaminated or are irritated. Beware of underestimating this time period —be sure to time this accurately. 		

Slides	Primary Course Information	Instructor Activity/Information
Decontamination Phase *Procedures: Level 3 Field Decon*  While flushing the victim, try to provide for modesty needs! 7) Wrap the person in a paper blanket or disposable coveralls made of such material as Tyvek®.		
Decontamination Phase *Procedures: Level 3 Field Decon* 8) Transport to a medical facility for further decon, treatment and observation. 		
Decontamination Phase *Procedures: Level 3 Field Decon* The primary objectives of Level 3 decontamination are: • rapid dilution of the material by flushing with a fog stream. • rapid removal of clothing while undergoing a continuous rinse.		

Slides	Primary Course Information	Instructor Activity/Information
Post-decontamination Phase *Procedures for the Decon Team*  Personnel conducting decontamination are to decontaminate themselves prior to leaving the decon area. The Decon Team should use the level of decontamination equal to their level of exposure.		
Post-decontamination Phase *Procedures for Clean-up*  Individuals responsible for decon procedures need to ensure that the decon area itself is properly decontaminated to prevent or at least minimize harm to the environment.		
Rescue & Decon of Victims  • Considerations • Guidelines – Know your limitations – Use proper equipment – Decontaminate victims		

Slides	Primary Course Information	Instructor Activity/Information
Medical Transport  Criteria for transport • direct skin contact with a hazardous material • a respiratory exposure to a chemical		
Notification of Facility Before transporting chemical exposure patients to a medical facility, the facility should be notified of the exposure.		
Decon of Clothing, Apparatus & Equipment • Procedures • Runoff water considerations		

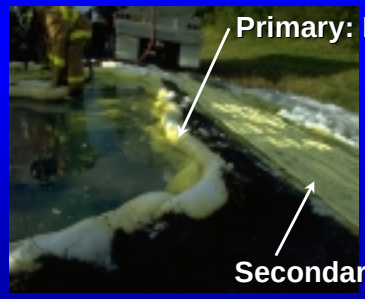
Slides	Primary Course Information	Instructor Activity/Information
		
Hazardous Materials Control Introduction This module will identify the: • purpose of controlling releases • various steps & methods involved in controlling releases		
Hazardous Materials Control Purpose 		

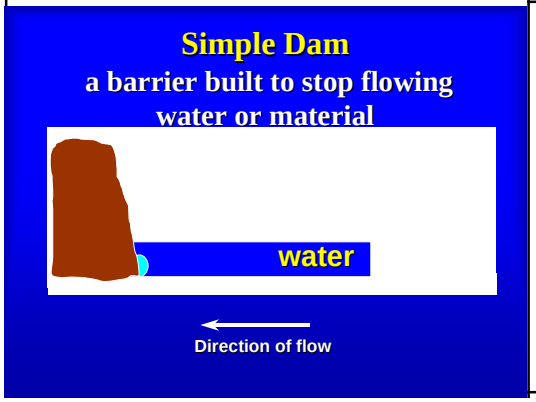
Slides	Primary Course Information	Instructor Activity/Information
		
		
		

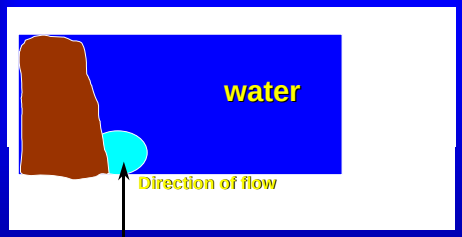
Slides	Primary Course Information	Instructor Activity/Information
Steps in Spill or Leak Response 1. Identify the material and its associated hazards 2. Use proper protective clothing and equipment 3. Stop the flow at the source (containment) 4. Confine spilled material to the immediate area (confinement) 5. Recover spilled material (utilizing a professional clean-up company)		
Control Methods  Defensive: Operations Level Offensive: Technician Level **Containment: Control the flow at the source.**		
Defensive Control: Operations Level  Containment: Stopping the flow at the source without approaching the actual point of the release — e.g., defensive closing of valves.		

Slides	Primary Course Information	Instructor Activity/Information
Offensive Control: Technician Level  Containment: Stopping the flow by approaching the point of the release to plug, patch, or otherwise stop the release (offensive).		
Legal Considerations  OSHA First Responder (Operations): …those who respond in a defensive fashion *without actually trying to stop the release.*		
Legal Considerations  OSHA Technician: ...those who respond… *in order to plug, patch, or otherwise stop the release.*		

Slides	Primary Course Information	Instructor Activity/Information
Control Methods  **Confinement:** Confine already spilled material to the immediate area.		
Control Methods **Confinement - Solids**   ❑ Containerizing - Placing spilled solid material into a compatible container. ❑ Covering - Placing a compatible cover over spilled material to prevent vapor or particle movement due to wind or exposure to moisture (rain).		
Control Methods **Confinement** **Liquids** o Retaining o Diking o Absorption o Dams o Remote valve shutoff o Covering		

Slides	Primary Course Information	Instructor Activity/Information
Retaining: Catch a liquid spilling or leaking from an elevated source 		
Diking: Stop, slow, redirect flowing liquid 		
Diking: Protect storm drains 		

Slides	Primary Course Information	Instructor Activity/Information
		
		
		

Slides	Primary Course Information	Instructor Activity/Information
Complex (overflow) Dam  		
Complex (underflow) Dam  **2-H Rule:** The distance from the low end to the high end must be twice the diameter of the pipe to prevent a vortex.		
Remote valve shut-off: Stopping the flow of materials at a distance 		

Slides	Primary Course Information	Instructor Activity/Information
Covering: Minimizing vaporization 		
Control Methods Liquids: *Dilution* • Positive aspects • Negative aspects		
Control Methods Gases & vapors ❑ Closing doors & windows ❑ Dispersion